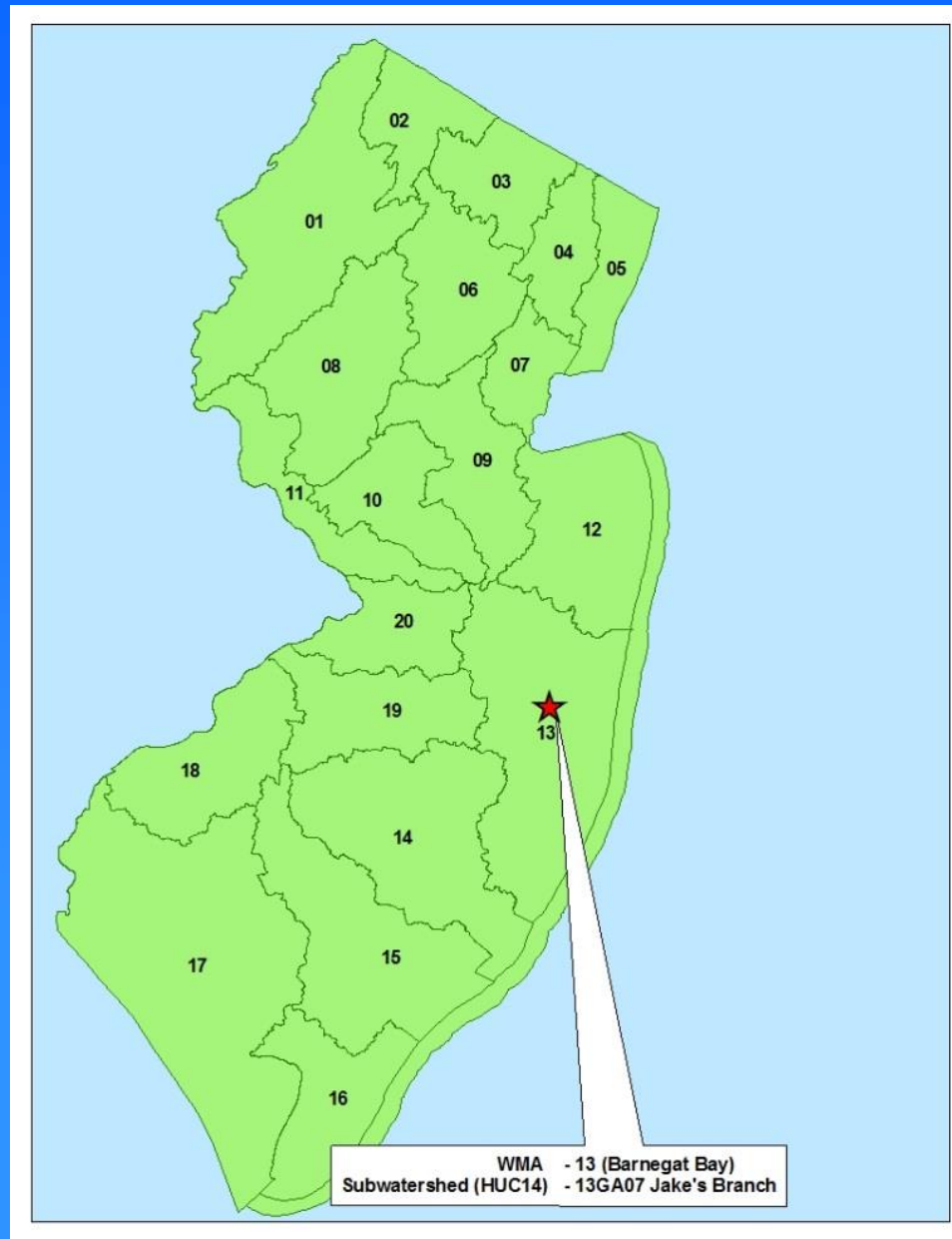# Mapping Inventory

Purpose:
Demonstrate a methodology to effectively map and inventory stormwater infrastructure and maintain MS4 permit compliance utilizing readily available technology.
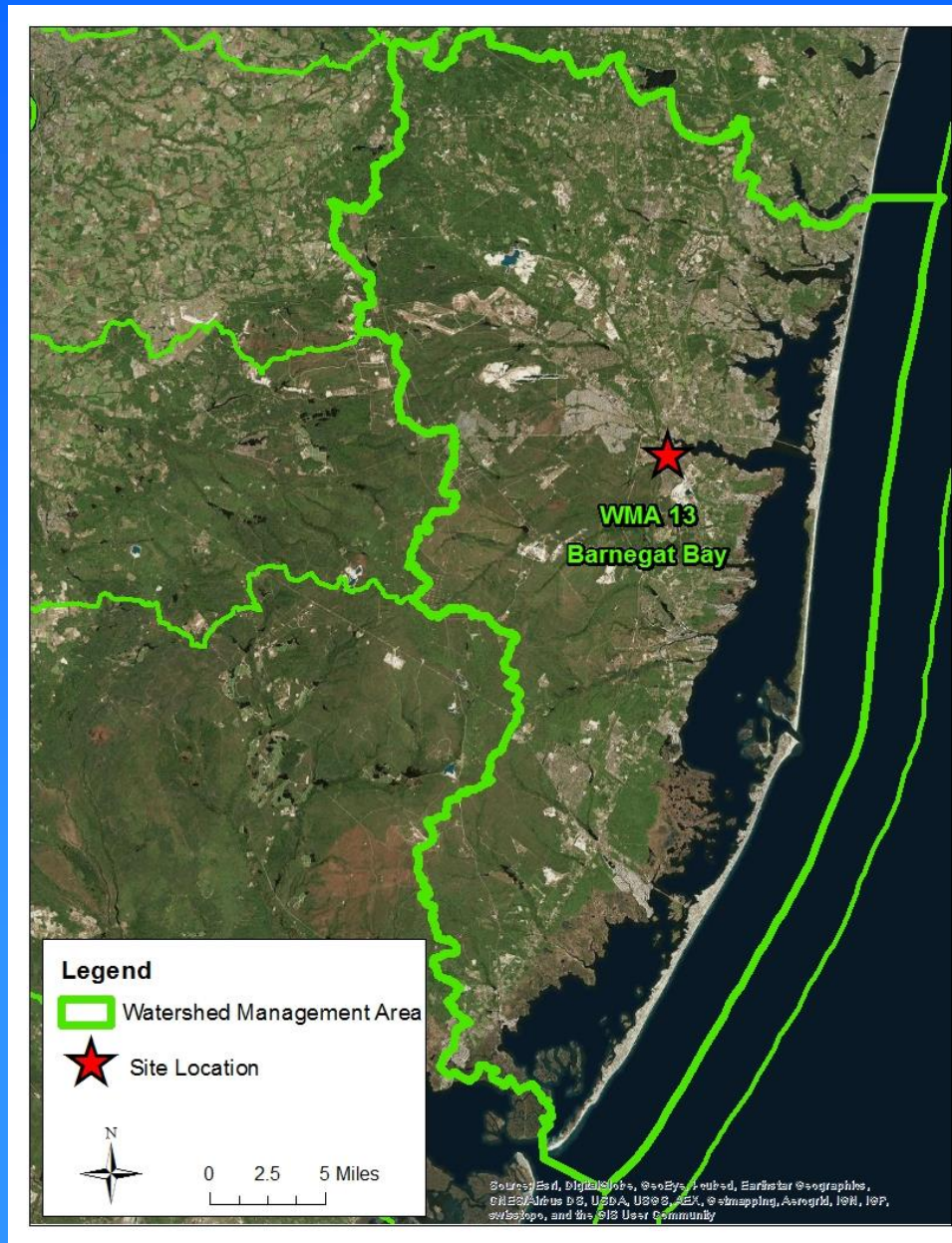
October 15, 2014

NJDEP-Work in Progress

MS4 Mapping and Inventory Requirements

❑ Complete and maintain outfall pipe mapping

❑ Inventory, inspect, and maintain outfalls, storm drains, and stormwater basins

❑ Identify locations of storm drain retrofits, outfall scouring, illicit discharges, and vehicle washing occurrences
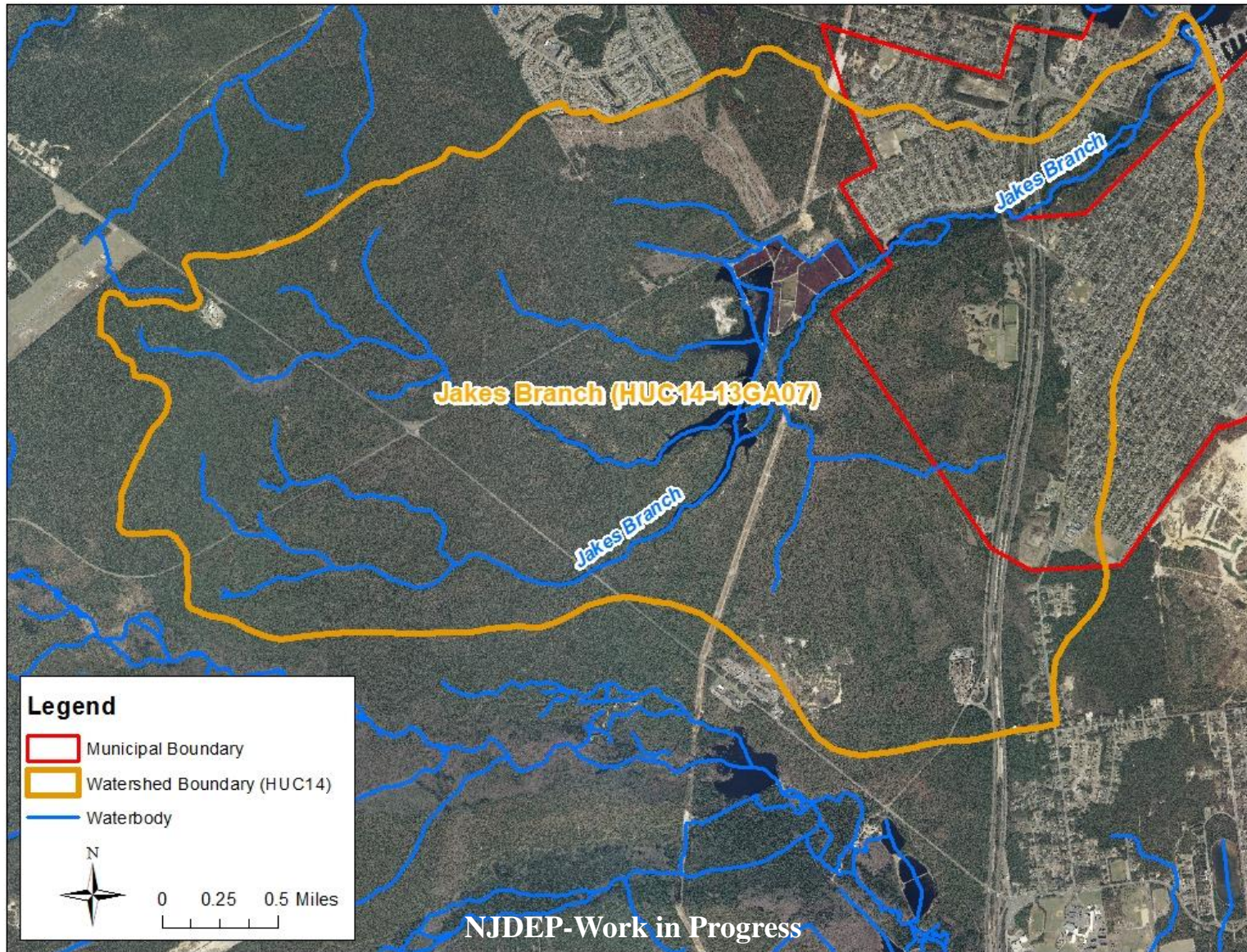
Project Area:

WMA - 13 (Barnegat Bay)
Subwatershed (HUC14) - 13GA07 Jake's Branch

Watershed Management Area Map

HUC14 Map

Jakes Branch

Jakes Branch (HUC14-13GA07)

Jakes Branch

Legend

- ▭ Municipal Boundary
- ▭ Watershed Boundary (HUC14)
- — Waterbody

N

0   0.25   0.5 Miles

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Method:

Equipment Used in Study:

GPS – Trimble Unit

     - Any brand can be used but it must meet accuracy requirements

     - Can be rented, purchased, borrowed, shared with other municipalities, etc.

     - Layers and data dictionaries can be downloaded from NJDEP for use with Terrasync or ArcPad GPS unit

Camera

GIS

     - Free ESRI GIS software can be obtained to review collected data

     - Data submitted to NJDEP may be made available through web based applications

MS Excel

Method:

Available Information Referenced:

SIIA, H&H Database, Watershed Studies, MS4 Outfall Map, MS4 Stormwater Inventory, NJDEP GIS Data
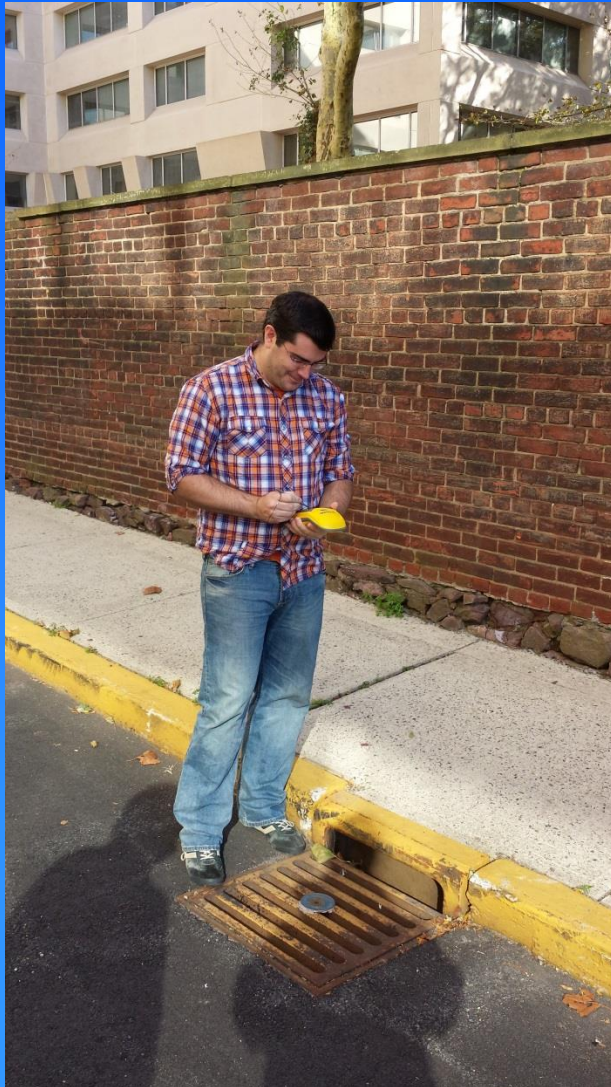
Field Verification:

Location Mapping with GPS Unit, Outfall Inspections, Storm Drain Inspections, Stormwater Basin Inspections

Efficiency (24 Hours)

24 Stormwater Outfalls, 403 Storm Drain Inlets, and 13 Stormwater Basins

Method:

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FID	10
Owner	Municipality 2
Permit Type	MS4
Storm Drain ID	11
Storm Drain Description	Combination Inlet
Storm Drain Location	Street
Type Area Drained	Suburban
Inspector	Kevin Ball
Date	2014-08-15
24 Hour Precipitation	Yes
24 Hour Snow Melt	No
Curb Opening Retrofit	No
Bicycle Safe Grate	No
Storm Drain Labeled	Yes
General Comments	None
Structural Condition	Good
Label Condition	Good
Drain Grate Clogged	Yes
Storm Drain Comments	None
Drain BMP Present	No
BMP Type	N/A
BMP Effective	N/A
BMP Comment	None
Debris Present	Yes
Prevelant Debris Type	Floatables > 2"" dia
Debris Source	Local Residences
Debris Comments	Area experienced flooding overnight
Standing Water	No
Outlet Clogged	No
Dry Weather Flow	No
Flow Color	N/A
Flow Odor	N/A
Flow Foam	N/A
Flow Sheen	N/A
Flow Comments	None
Illicit Connection	No
Connection Source	N/A
Connection Comments	N/A
Maintenance Required	Yes
Maintenance Code	1-General Maintenance
Maintenance Comment	None
Maintenance Complete	No
Date Completed	N/A
Post Maint. Photo	N/A
Time	09:23:06am

FID	10
Owner	Municipality 2
Permit Type	MS4
Storm Drain ID	11
Storm Drain Description	Combination Inlet
Storm Drain Location	Street
Type Area Drained	Suburban

Inspector	Kevin Ball
Date	2014-08-13
24 Hour Precipitation	Yes
24 Hour Snow Melt	No
Curb Opening Retrofit	No
Bicycle Safe Grate	No
Storm Drain Labeled	Yes
General Comments	None
Structural Condition	Good
Label Condition	Good
Drain Grate Clogged	Yes
Storm Drain Comments	None
Drain BMP Present	No
BMP Type	N/A
BMP Effective	N/A
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Time	09:23:06am

Stormwater Inventory Map
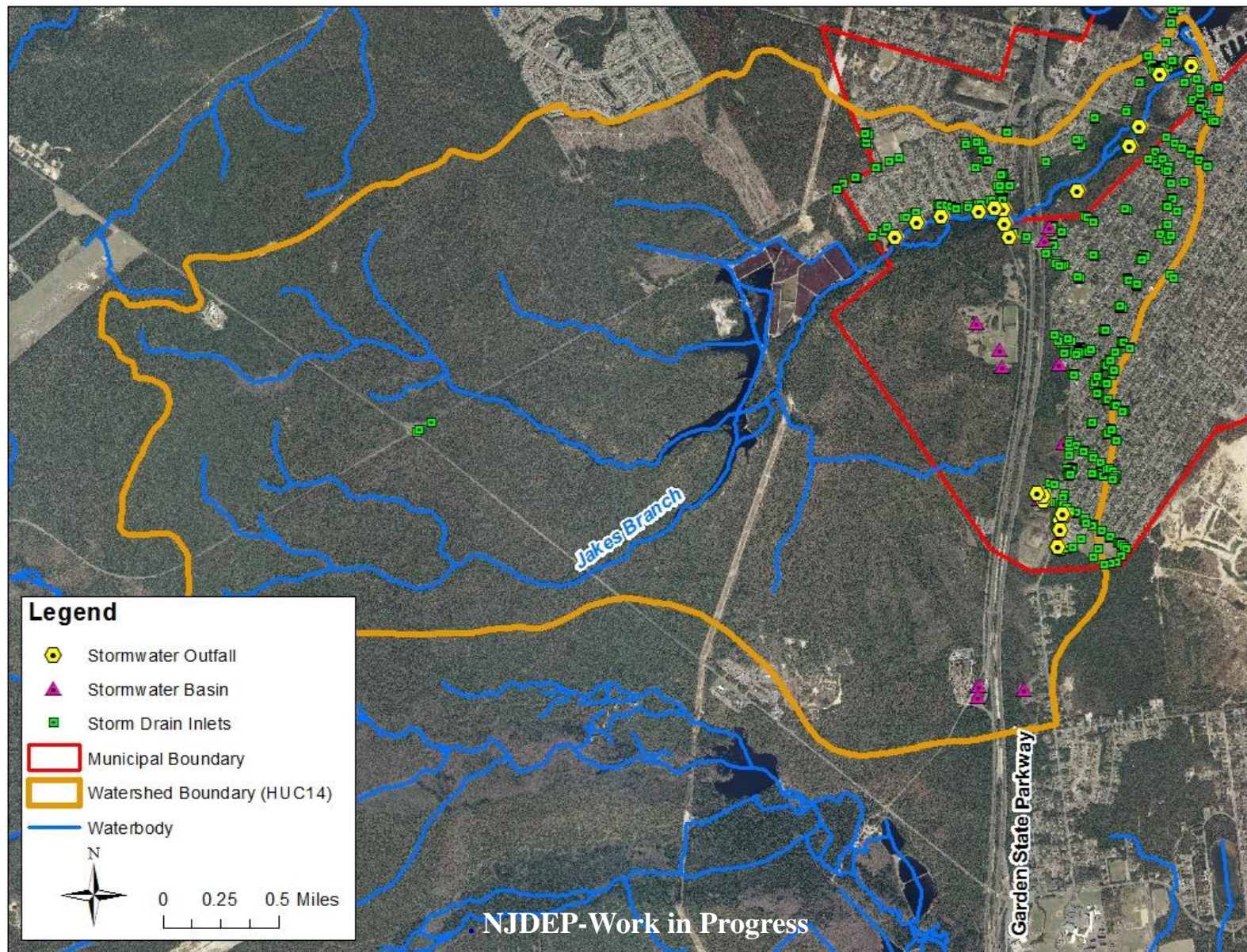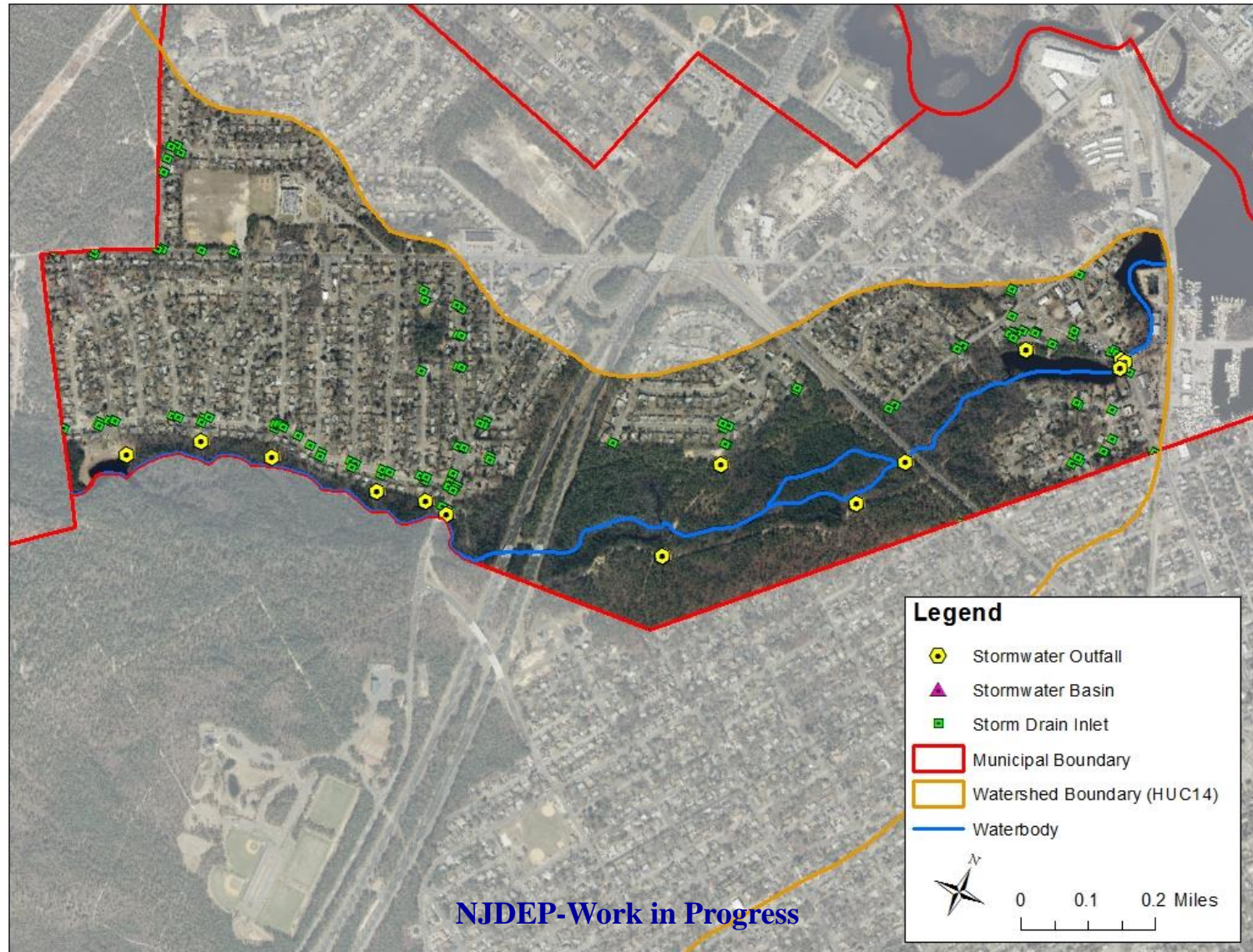
Legend

- ⬡ Stormwater Outfall
- ▲ Stormwater Basin
- ▪ Storm Drain Inlets
- ▭ Municipal Boundary
- ▭ Watershed Boundary (HUC14)
- — Waterbody

N

0   0.25   0.5 Miles

Jakes Branch

Garden State Parkway

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Stormwater Inventory Map – Study Area Within Municipality 1

Legend

⬡ Stormwater Outfall
▲ Stormwater Basin
▪ Storm Drain Inlet
▭ Municipal Boundary
▭ Watershed Boundary (HUC14)
— Waterbody

N

0   0.1   0.2 Miles

NJDEP-Work in Progress

Stormwater Inventory Map – Study Area Within Municipality 2

Legend
- ⊙ Stormwater Outfall
- ▲ Stormwater Basin
- ▣ Storm Drain Inlet
- ▭ Municipal Boundary
- ▭ Watershed Boundary (HUC14)
- — Waterbody

N

0   0.125   0.25 Miles

NJDEP-Work in Progress
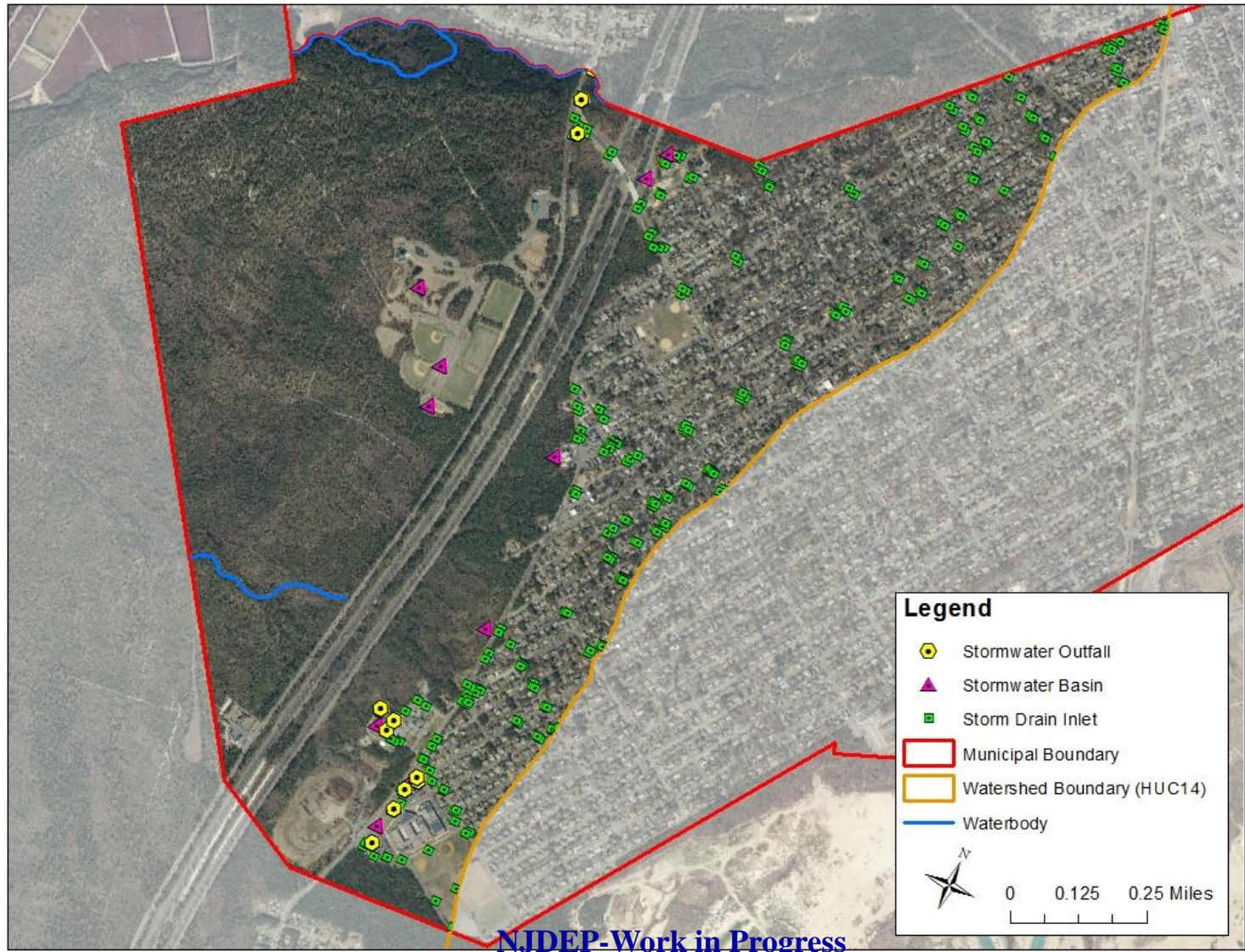
MS4 Mapping and Inventory Requirements

✓ Mapping tool meets MS4 mapping and inventory requirements

MS4 Inspection and Maintenance Requirements for Storm Drain Inlets

❑ **NJDEP Storm Drain Inlet Mapping and Inventory Data Dictionary Tool Example**

  ❑ Municipalities shall retrofit certain municipally owned or operated storm drain inlets to meet the standard in attachment C.

MS4 Inspection and Maintenance Requirements for Storm Drain Inlets

❑ **NJDEP Storm Drain Inlet Mapping and Inventory Data Dictionary Tool Example**

  ✓ Municipalities shall retrofit certain municipally owned or operated storm drain inlets to meet the standard in attachment C.

  ✓ Municipalities shall enforce an ordinance to require entities to retrofit existing privately owned storm drain inlets to meet the standard in attachment C.

  ✓ Municipalities shall label all storm drain inlets and shall also maintain the legibility of those labels.

  ✓ Municipalities shall inspect all municipally owned and operated catch basins for accumulated sediment, trash, and debris and clean those basins and inlets where sediment, trash, or debris is present.

MS4 Inspection and Maintenance Requirements for Storm Drain Inlets

NJDEP-Work in Progress

MS4 Inspection and Maintenance Requirements for Storm Drain Inlets

NJDEP-Work in Progress

MS4 Inspection and Maintenance Requirements for Storm Drain Inlets

NJDEP-Work in Progress

MS4 Inspection and Maintenance Requirements for Storm Drain Inlets

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Mapping Study Findings In Relation To MS4 Requirements:

Required Label

No Grate or Hood Retrofit

High Water Mark

High Water Mark

High Water Mark

MS4 Inspection and Maintenance Requirements for Storm Drain Inlets

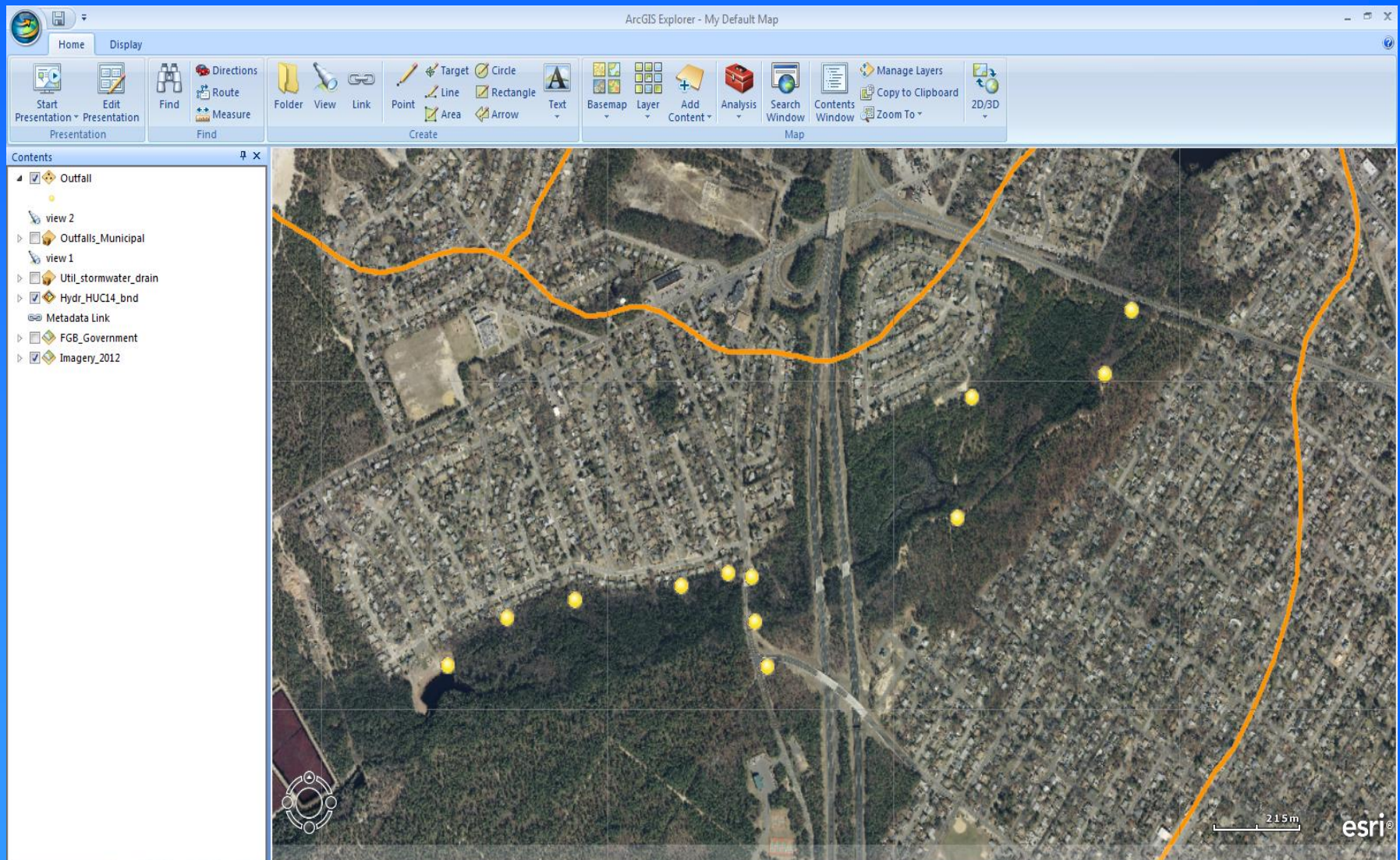# MS4 Inspection and Maintenance Requirements for Stormwater Outfalls

❑ **NJDEP Stormwater Outfall Mapping and Inventory Data Dictionary Tool Example**

  ❑ Municipalities shall develop/maintain a program to detect, remediate, and maintain any localized stream bank scouring from stormwater outfall pipes (tidal and non-tidal).

MS4 Inspection and Maintenance Requirements for Stormwater Outfalls

❑ **NJDEP Stormwater Outfall Mapping and Inventory Data Dictionary Tool Example**

- ✓ Municipalities shall develop/maintain a program to detect, remediate, and maintain any localized stream bank scouring from stormwater outfall pipes (tidal and non-tidal).

- ✓ Municipalities shall perform/update a physical inspection of all municipality owned and operated outfall pipes (tidal and non-tidal) which discharge to a surface water body.

- ✓ Municipalities shall investigate dry weather flows discovered during routine inspections and maintenance of the MS4.

- ✓ Municipalities shall visually assess discharge outfalls on a periodic basis. (Sheen, foam, odor, or discoloration)
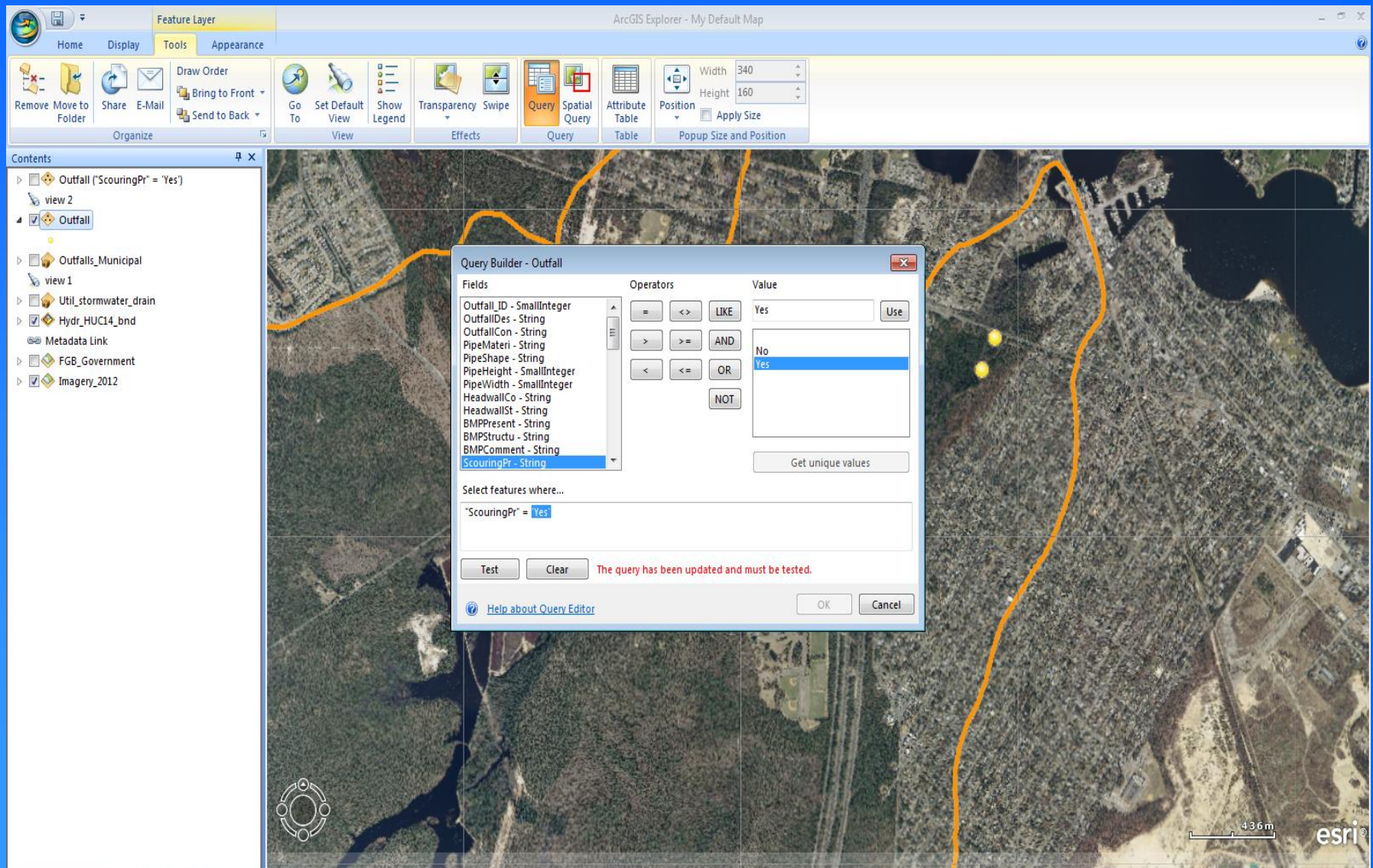
MS4 Inspection and Maintenance Requirements for Stormwater Outfalls
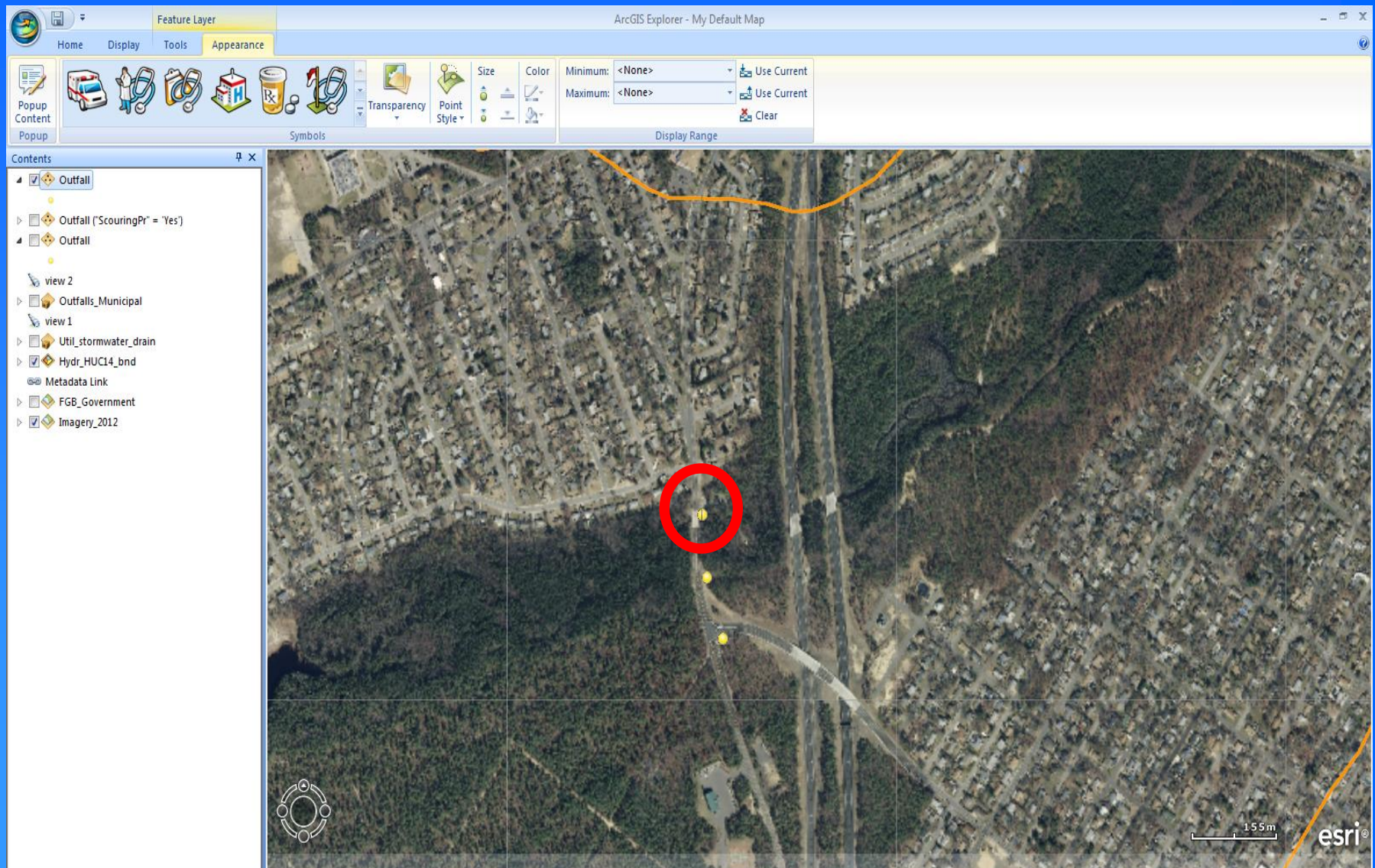

NJDEP-Work in Progress

MS4 Inspection and Maintenance Requirements for Stormwater Outfalls

MS4 Inspection and Maintenance Requirements for Stormwater Outfalls

MS4 Inspection and Maintenance Requirements for Stormwater Outfalls

MS4 Inspection and Maintenance Requirements for Stormwater Outfalls

Sediment Plume

Floatables

Scour and Erosion

MS4 Inspection and Maintenance Requirements for Stormwater Outfalls

MS4 Illicit Discharge Elimination Requirements

❑ **NJDEP Illicit Discharge Mapping and Inventory Data Dictionary Tool Example**

    ❑ Municipalities shall establish/maintain an ongoing program to detect and eliminate illicit connections in accordance with the procedures found in Attachment F of the permit.

MS4 Illicit Discharge Elimination Requirements

Illicit Discharge

Mulch Piles

MS4 Illicit Discharge Elimination Requirements

MS4 Illicit Discharge Elimination Requirements

❑ **NJDEP Illicit Discharge Mapping and Inventory Data Dictionary Tool Example**

✓ Municipalities shall establish/maintain an ongoing program to detect and eliminate illicit connections in accordance with the procedures found in Attachment F of the permit.

✓ **By using the data dictionary associated with storm drain inlets, inspections turning up consistent debris in municipally owned storm drain inlets can alert municipalities of illicit discharges.**

✓ **The elimination of illicit discharges can decrease annual stormwater infrastructure upkeep and maintenance costs.**

MS4 Additional Requirements

❑ **NJDEP mapping and inventory data dictionary tool can also assist in meeting the following MS4 requirements.**

✓ Municipalities shall implement Public Education and Outreach Program that focuses on educational and pollution prevention activities to involve the public in reducing pollutants in stormwater.

✓ Municipalities shall ensure adequate long-term operation and maintenance of any stormwater management measures (e.g. stormwater management basins)…

✓ Municipalities shall continue to implement a stormwater facility maintenance program for cleaning and maintenance of all municipally owned and operated stormwater facilities...

<u>Summary</u>

- ✓ Meets current outfall mapping requirements and any potential requirements under MS4 permit renewal.

- ✓ Assists in meeting maintenance and inspection requirements for outfalls, storm drain inlets, and stormwater management measures.

- ✓ Assists in identifying and eliminating illicit discharge requirements.

- ✓ Assists in education and community outreach requirements

- ✓ Assists in meeting stormwater audit requirements

<u>Questions?</u>

Bureau of Nonpoint Pollution Control

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Kevin Ball

Tim Ebersberger

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